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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/800,366

03/06/2001

Roland A. Wood

H0001512 (256.087US1)

3295

128 7590 02/13/2008
HONEYWELL INTERNATIONAL INC.
101 COLUMBIA ROAD
P O BOX 2245
MORRISTOWN, NJ 07962-2245

EXAMINER

LEE, SHUN K

ART UNIT

PAPER NUMBER

2884

MAIL DATE

DELIVERY MODE

02/13/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 09/800,366	Applicant(s) WOOD, ROLAND A.	
	Examiner Shun Lee	Art Unit 2884	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 November 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12, 14-25, 27 and 29-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12, 14-25, 27 and 29-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>20071119</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114 was filed in this application after a decision by the Board of Patent Appeals and Interferences, but before the filing of a Notice of Appeal to the Court of Appeals for the Federal Circuit or the commencement of a civil action. Since this application is eligible for continued examination under 37 CFR 1.114 and the fee set forth in 37 CFR 1.17(e) has been timely paid, the appeal has been withdrawn pursuant to 37 CFR 1.114 and prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on 19 November 2007 has been entered.

Information Disclosure Statement

2. The information disclosure statement filed on 19 November 2007 does not fully comply with the requirements of 37 CFR 1.98 because it lacks a legible copy (*i.e.*, the entire publication) of each foreign patent. It should be noted that the submission of an English language abstract of a reference may fulfill (see MPEP § 609.04(a)) the requirement for a concise explanation (37 CFR 1.98(a)(3)), but does not fulfill the requirement for a legible copy (37 CFR 1.98(a)(2)). Since the submission appears to be *bona fide*, applicant is given **ONE (1) MONTH** from the date of this notice to supply the above mentioned omissions or corrections in the information disclosure statement. NO EXTENSION OF THIS TIME LIMIT MAY BE GRANTED UNDER EITHER 37 CFR 1.136(a) OR (b). Failure to timely comply with this notice will result in the above

mentioned information disclosure statement being placed in the application file with the noncomplying information **not** being considered. See 37 CFR 1.97(i).

Claim Objections

3. Claim 1 is objected to because of the following informalities:

- (a) in claim 1, “frequency” on line 5 should probably be --is more frequent-- (see because “ ... fast scanning requires more frequent bias pulses ... ” in lines 12 and 13 on pg. 8 of the specification); and
- (b) in claim 1, “prior” on line 6 is vague since it is unclear what the single pulses are prior to.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1-12, 27, and 29-38 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Amended independent claim 1 recites the limitation “ ... wherein the N bias pulses have a shorter time duration and frequency, selected to reduce microbolometer temperature variation and noise compared to a time duration of prior single pulses; ... ”. Applicant indicates that support for the

amendments is found at least starting on page 7, line 15 of the application to page 9, line 8. In regard to an increase in microbolometer temperature, the specification states (pg. 8, line 17) that this “... is because the heating effect of shorter bias pulses is less”. However in regard to a variation in microbolometer temperature, the specification states (pg. 8, lines 17-20) that “... the shorter time duration 520 between the two or more bias pulses 510 allows less time for cooling to occur, also reducing the temperature variation to a lesser value 530 as shown in Figure 5”. Thus the specification discloses that the temperature variation is changed by the time duration between bias pulses (whereas temperature increases due to heating is affected by the time duration of bias pulses). In addition, the specification states (pg. 8, line 27 to pg. 9, line 6) that each “... signal therefore has $N^{1/2}$ greater rms white noise ... If the N signal values from each microbolometer in each frame time are used to form an average signal value, ... the low frequency noise rms value for noise frequencies approximately between the frame repetition rate frequency and the bias pulse repetition frequency is approximately reduced by the factor of $N^{1/2}$ below the $N=1$ value ...”. Thus the specification discloses that noise is reduced by signal averaging. Therefore, reducing microbolometer temperature variation and noise compared to a time duration of single pulses does not appear to be described in the specification as filed.

Amended independent claim 1 also recites the limitation “... wherein the signal resulting from the rise in temperature caused by the N bias pulses is less than the signal resulting from incident infrared radiation; ...”. Applicant indicates that support for the amendments is found at least starting on page 7, line 15 of the application to page 9, line 8. The specification states (pg. 7, lines 27 and 28) that the “... variation of signal level caused by this temperature

variation 440 is significantly greater than the signals generated by the incident infrared radiation 130". Thus the specification discloses (see PRIOR ART Fig. 4) that at least in the prior art, variation of signal level caused by $\sim 2^{\circ}\text{C}$ temperature variation is significantly greater than the signals generated by the incident infrared radiation. The specification also states (pg. 8, lines 14 and 15) that "Graph 500 also illustrates temperature variation in each microbolometer caused by the application of two or more bias pulses 510". Thus Fig. 5 illustrates temperature variations due to N bias pulses. However, the specification does not appear to describe the signal resulting from the rise in temperature caused by the N bias pulses. Therefore, the signal resulting from the rise in temperature caused by the N bias pulses is less than the signal resulting from incident infrared radiation does not appear to be described in the specification as filed.

Amended independent claim 27 recites the limitations "... a timing circuit coupled to the array to apply N bias pulses substantially sequentially to each microbolometer in the array such that the resulting temperature in each microbolometer in the array due to the application of the bias pulses is less than the temperature increase from incident infrared radiation during a frame time; ...". First it is noted that "... substantially sequentially ... during a frame time ..." appear to imply $N > 1$. Further, applicant indicates that support for the amendments is found at least starting on page 7, line 15 of the application to page 9, line 8. The specification states (pg. 7, lines 27 and 28) that the "... variation of signal level caused by this temperature variation 440 is significantly greater than the signals generated by the incident infrared radiation 130". Thus the specification suggests (see PRIOR ART Fig. 4) that at least in the prior art, $\sim 2^{\circ}\text{C}$ temperature variation due to $N = 1$ bias pulse during a frame time is significantly greater than the temperature

increase due to the incident infrared radiation. However, there does not appear to be any disclose of the temperature increase from incident infrared radiation relative to the resulting temperature due to the application of $N > 1$ bias pulses. Therefore, the resulting temperature in each microbolometer in the array due to the application of the bias pulses is less than the temperature increase from incident infrared radiation does not appear to be described in the specification as filed.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 27 and 29-38 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Amended independent claim 27 recites the limitations “ ... a timing circuit coupled to the array to apply N bias pulses substantially sequentially to each microbolometer in the array such that the resulting temperature in each microbolometer in the array due to the application of the bias pulses is less than the temperature increase from incident infrared radiation during a frame time; ... ”. It should be noted that a claim may be rendered indefinite by reference to an object that is variable (MPEP § 2173.05(b)). Thus a limitation in a claim to an apparatus that recited “less than the temperature increase from incident infrared radiation” is indefinite because the relationship of parts was not based on any known standard for operating a timing circuit, but on the magnitude of unspecified incident infrared radiation. That is, the operation of the apparatus for incident infrared radiation of a first magnitude would satisfy “less than the temperature increase from incident infrared radiation” whereas the identical operation of the

same apparatus for incident infrared radiation of a second magnitude would not satisfy “less than the temperature increase from incident infrared radiation”.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 14-17, 20, 22-25, 27, 29, 33, and 35-38 are rejected under 35 U.S.C. 102(b) as being anticipated by Wood *et al.* (US 5,675,149) and incorporated by reference US Patent 5,420,419 (Wood).

The specification states (pg. 2, lines 6 and 7) that the “ ... term “frame time” refers to a time in which a microbolometer array produces each complete picture or image of an object being viewed”.

In regard to claim **14**, the specification discloses (pg. 8, lines 5-7) that the “ ... application of two or more bias pulses 510 to each of the microbolometers within the frame time 410 is referred to as “fast scanning””. Thus, “in a manner consistent with fast scanning” was not given any patentable weight since “fast scanning” does not appear to impose any additional structural limitations on the claimed apparatus. Further, Wood *et al.* disclose an infrared radiation detector apparatus, comprising:

- (a) microbolometers in an array (column 5, line 65 to column 6, line 1);
- (b) a timing circuit coupled to the array to apply (US 5,420,419 column 6, lines 18-34) N bias pulses substantially sequentially to each microbolometer in the array during

- a frame time (*i.e.*, the exposure time for producing a complete image; column 5, lines 47-53) in a manner consistent with fast scanning;
- (c) a measuring circuit coupled to the array to measure N resulting signals associated with each of the applied N bias pulses (*i.e.*, multiple measurements; column 5, lines 47-53) during the frame time (*i.e.*, the exposure time);
- (d) a computing circuit coupled to the measuring circuit to compute an average signal value (*i.e.*, averaging of sensor signals; column 5, lines 47-53) for each microbolometer in the array from the measured N resulting signals during the frame time (*i.e.*, the exposure time); and
- (e) an output circuit coupled to the computing circuit to produce an output signal based on the computed average value for each microbolometer in the array during the frame time (*i.e.*, the exposure time) is inherent in displaying an image corresponding to the output signals.

In regard to claim **15** which is dependent on claim 14, Wood *et al.* also disclose (column 2, lines 57-59) that the output circuit further comprises an integrator (integrating preamplifiers 26) and an A/D converter (32) wherein said output signal produced is a digital signal value for each microbolometer in the array.

In regard to claim **16** which is dependent on claim 15, Wood *et al.* also disclose (column 4, lines 5-24) a digital image processor (36), coupled to the output circuit to receive the digital signal value associated with each microbolometer in the array and correct the received digital signal value for image defects.

In regard to claim **17** which is dependent on claim 16, Wood *et al.* also disclose (column 4, lines 5-24) that the digital image processor (36) further comprises a correction circuit, to apply a corrective electrical signal based on a correction value to the output signal to correct for resistance non-uniformity in each microbolometer to obtain a substantially uniform output signal value.

In regard to claim **20** which is dependent on claim 14, Wood *et al.* also disclose (US 5,420,419 Fig. 6 and column 6, lines 18-34) that the bias pulses are substantially equal in magnitude.

In regard to claim **22** which is dependent on claim 14, Wood *et al.* also disclose (US 5,420,419 Fig. 6 and column 2, lines 17-20) that the bias pulses comprise voltage bias pulses.

In regard to claim **23** which is dependent on claim 22, Wood *et al.* also disclose (US 5,420,419 column 7, lines 26-28) that the resulting signals comprise current signals.

In regard to claim **24** which is dependent on claim 14, Wood *et al.* also disclose (column 5, lines 47-53) that multiple measurements and averaging of sensor signals is equivalent to long exposures. Inherent in an average is at least two sensor signals each associated with an applied bias pulses and thus there are in the range of about 2 to 100 bias pulses dependent on the length of the exposure.

In regard to claim **25** which is dependent on claim 24, Wood *et al.* also disclose (US 5,420,419 Fig. 6 and column 6, lines 18-34) that the bias pulses have time duration in the range of about 0.1 to 20 microseconds (e.g., 5-6 μ s).

In regard to claim **27** in so far as understood, the cited prior art is applied as in claim 14 above. It should be noted that a claim containing a “recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus” (*Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987)) if the prior art apparatus teaches all the structural limitations of the claim (MPEP § 2114). Thus, “the resulting temperature in each microbolometer in the array due to the application of the bias pulses is less than the temperature increase from incident infrared radiation during a frame time” was not given any patentable weight since “the resulting temperature” and/or “the temperature increase” do not appear to impose any additional structural limitations on the claimed apparatus.

In regard to claim **29** which is dependent on claim 27, the cited prior art is applied as in claim 15 above.

In regard to claim **33** which is dependent on claim 27, the cited prior art is applied as in claim 20 above.

In regard to claims **35** and **36** which are dependent on claim 27, the cited prior art is applied as in claims 22 and 23 above.

In regard to claims **37** and **38** which are dependent on claim 27, the cited prior art is applied as in claims 24 and 25 above.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1, 2, 7-12, 21, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wood *et al.* (US 5,675,149) and incorporated by reference US Patent 5,420,419 (Wood) in view of Duvall, III (US 5,258,619).

In regard to claim 1, Wood *et al.* disclose a method for improving performance sensitivity and facility of operation of an array including microbolometers, comprising:

- (a) applying N bias pulses substantially sequentially during a frame time to each microbolometer in the array, wherein N is 2 or greater;
- (b) measuring N resulting signals corresponding to the N bias pulses;
- (c) computing an average signal value from the N resulting signals corresponding to each microbolometer in the array during the frame time; and
- (d) producing an output signal based on the computed average signal value for each microbolometer in the array during the frame time.

The method of Wood *et al.* lacks that the N bias pulses have a shorter time duration and frequency, selected to reduce microbolometer temperature variation and noise compared to a time duration of single pulse, wherein the signal resulting from the rise in temperature caused by the N bias pulses is less than the signal resulting from incident infrared radiation. Duvall, III teaches (column 6, lines 43-53) that a swept bias technique includes adjusting the waveform parameters of rise-time, fall-time, peak to peak values, time between pulses, pulse slope, pulse width, and pulse amplitude which best meets a given detector and design situation in order to minimize unwanted detector heating. Therefore it would have been obvious to one having ordinary skill in the art at the time

of the invention to adjust the bias pulse waveform parameters (e.g., pulse duration and duty cycle) in the method of Wood *et al.*, in order to meet a given detector and design situation (e.g., the signal resulting from the rise in temperature caused by the N bias pulses is less than the signal resulting from incident infrared radiation) so as to minimize unwanted detector heating relative to heating from incident infrared radiation as taught by Duvall, III.

In regard to claim **2** which is dependent on claim 1, Wood *et al.* also disclose (column 1, lines 55-58) recording and displaying IR images. Inherent in the formation of images is repeating the applying, measuring, computing, and producing steps to compute output signals during each frame time in order to form IR images.

In regard to claim **7** which is dependent on claim 1, Wood *et al.* also disclose (US 5,420,419 Fig. 6 and column 6, lines 18-34) that the bias pulses are substantially equal in magnitude.

In regard to claim **8** which is dependent on claim 1, the method of Wood *et al.* lacks that the bias pulses are substantially equally spaced in time. Duvall, III teaches (column 6, lines 43-53) that a swept bias technique includes adjusting the waveform parameters of rise-time, fall-time, peak to peak values, time between pulses, pulse slope, pulse width, and pulse amplitude which best meets a given detector and design situation in order to minimize unwanted detector heating. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to adjust the bias pulses waveform parameters (e.g., pulses are substantially equally spaced in time)

in the method of Wood *et al.*, in order to meet a given detector and design situation so as to minimize unwanted detector heating as taught by Duvall, III.

In regard to claim **9** which is dependent on claim 1, Wood *et al.* also disclose (US 5,420,419 Fig. 6 and column 2, lines 17-20) that the bias pulses comprise voltage bias pulses.

In regard to claim **10** which is dependent on claim 1, Wood *et al.* also disclose (US 5,420,419 column 7, lines 26-28) that the resulting signals comprise current signals.

In regard to claim **11** which is dependent on claim 1, Wood *et al.* also disclose (column 5, lines 47-53) that multiple measurements and averaging of sensor signals is equivalent to long exposures. Inherent in an average is at least two sensor signals each associated with an applied bias pulses and thus there are in the range of about 2 to 100 bias pulses dependent on the length of the exposure.

In regard to claim **12** which is dependent on claim 1, Wood *et al.* also disclose (US 5,420,419 Fig. 6 and column 6, lines 18-34) that the bias pulses have time duration in the range of about 0.1 to 20 microseconds (e.g., 5-6 μ s).

In regard to claim **21** which is dependent on claim 20, the cited prior art is applied as in claim 8 above.

In regard to claim **34** which is dependent on claim 27, the cited prior art is applied as in claim 21 above.

12. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wood *et al.* (US 5,675,149) and incorporated by reference US Patent 5,420,419 (Wood)

in view of Duvall, III (US 5,258,619) as applied to claim 2 above, and further in view of Applicant Admitted Prior Art.

In regard to claim **3** which is dependent on claim 2, the modified method of Wood *et al.* lacks applying a corrective electrical signal to the output signal to correct for resistance non-uniformity between the microbolometers of the array to obtain a substantially uniform output signal value. Applicant admits (first paragraph on pg. 6) it is known in the art (such as US Patent 4,752,694) to apply a corrective electrical signal to the output signal to correct for resistance non-uniformity between the one or more microbolometers of the array (*i.e.*, “coarse non-uniformity correction”) to obtain a substantially uniform output signal value. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to apply a corrective electrical signal in the modified method of Wood *et al.*, in order to obtain a substantially uniform output signal value.

In regard to claim **4** which is dependent on claim 3, Wood *et al.* also disclose (column 2, lines 57-59) an integrator (integrating preamplifiers 26) and an A/D converter (32) to converting the substantially uniform output signal associated with each microbolometer to a digital signal value.

In regard to claim **5** which is dependent on claim 4, Wood *et al.* also disclose (column 4, lines 5-24) passing the digital signal values associated with each microbolometer in the array through a digital image processor to correct for image defects.

13. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wood *et al.* (US 5,675,149) and incorporated by reference US Patent 5,420,419 (Wood) and Duvall, III (US 5,258,619) in view of Applicant Admitted Prior Art as applied to claim 5 above, and further in view of Thiede *et al.* (US 5,129,595).

In regard to claim **6** which is dependent on claim 5, the modified method of Wood *et al.* lacks that the image defects comprise fine offsets, gain non-uniformity, and dead pixels. Image defects such as fine offsets, gain non-uniformity, and dead pixels are well known in the art. For example, Thiede *et al.* teach (column 7, lines 45-66) the correction of gain non-uniformity and dead pixels in order to fully compensate for array non-uniformity. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to correct for gain non-uniformity and dead pixels in the modified method of Wood *et al.*, in order to fully compensate for array non-uniformity.

14. Claims 18, 19, and 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wood *et al.* (US 5,675,149) and incorporated by reference US Patent 5,420,419 (Wood) in view of Thiede *et al.* (US 5,129,595).

In regard to claim **18** which is dependent on claim 17, the cited prior art is applied as in claim 6 above.

In regard to claim **19** which is dependent on claim 18, Wood *et al.* also disclose (column 4, lines 5-24) that the digital image processor (36) further comprises digital memories to store the correction values for each microbolometer in the array.

In regard to claim **30** which is dependent on claim 29, the cited prior art is applied as in claim 6 above.

In regard to claim **31** which is dependent on claim 30, the cited prior art is applied as in claims 16 and 17 above.

In regard to claim **32** which is dependent on claim 31, the cited prior art is applied as in claim 19 above.

Response to Arguments

15. Applicant's arguments filed 19 November 2007 have been fully considered but they are not persuasive.

Applicant's arguments ("§102 Rejection of the Claims" on pp. 8 and 9 of remarks filed 19 November 2007) with respect to amended independent claim 1 have been considered but are moot in view of the new ground(s) of rejection.

Applicant also argues ("§102 Rejection of the Claims" on pp. 8 and 9 of remarks filed 19 November 2007) that fast scanning has been described in the application as the use of multiple short pulses to reduce the heating effect caused by single pulse prior art systems. Examiner respectfully disagrees. The specification discloses (pg. 8, lines 5-7) that the "... application of two or more bias pulses 510 to each of the microbolometers within the frame time 410 is referred to as "fast scanning"". Thus, "in a manner consistent with fast scanning" was not given any patentable weight since "fast scanning" does not appear to impose any additional structural limitations on the claimed apparatus.

Applicant argues ("§103 Rejection of the Claims" on pp. 9 and 10 of remarks filed 19 November 2007) that independent claim 27 is allowable since there is no suggestion to adjusting various pulse parameters to control heating so as to ensure that the temperature variations are less than those induced by the incident infrared radiation as

claimed. Examiner respectfully disagrees. It should be noted that a claim containing a “recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus” (*Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987)) if the prior art apparatus teaches all the structural limitations of the claim (MPEP § 2114). Thus, “the resulting temperature in each microbolometer in the array due to the application of the bias pulses is less than the temperature increase from incident infrared radiation during a frame time” was not given any patentable weight since “the resulting temperature” and/or “the temperature increase” do not appear to impose any additional structural limitations on the claimed apparatus. Rather, it appears that “the resulting temperature” and/or “the temperature increase” depends on the intended use of the apparatus.

Applicant also argues (“§103 Rejection of the Claims” on pp. 9 and 10 of remarks filed 19 November 2007) that the rejections be withdrawn since these claims depend from claims that are believed to be allowable. Examiner respectfully disagrees for the reasons discussed above.

Conclusion

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shun Lee whose telephone number is (571) 272-2439. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, David Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Constantine Hannaher/
Primary Examiner, Art Unit 2884

SL